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Introductory Lecture

on

Therapeutics.

By

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1 Lecture

The Science of Medicine has for its object the alleviation & cure of diseases. It is necessary, in connection with other departments of which this Science is composed, that the student should acquire a thorough knowledge of the means whereby its purposes can be accomplished.

Two species of agents are at the command of the practitioner, Moral & Physical. They constitute what has been termed Aetology, or the science of remedies.

The former, or Moral Agents, are applicable to those cases in which it becomes necessary to administer to the "Mind diseased"; or to such as present bodily derangement maintained, or sluggishly advancing towards removal, from mental inquietude.

Physical agents are employed to remove corporeal deviations from health, whether functional or organic. They are the

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material constituents of the world in which we dwell. Some of them are absolutely necessary for the maintainance of life, when acting in due proportion to its exigencies; when unordinately impressing the organism, they vitiate & derange its vital phenomena, but by proper regulation can again be made to subserve a curative purpose. Water, air, food, heat, light and perhaps electricity constitute such agents. The proper management of them involves Hygienic rules & principles.

Others consist of substances found abundantly in the three Kingdoms of Nature, — the Animal, the Vegetable, and the Mineral — which have been proved by observation and experience to have a decided controlling or perturbating influence over the organs of the body. These belong to the Materia Medica.

Besides those mentioned there is a set of agents employed mechanically, but which

induce a direct change in the vital actions or movements, they are bloodletting, issues — setons & acupuncture. The operations of the surgeon belong to the same category.

To understand the appropriate application and employment of remedies derived from every source, is the foundation of all curative methods, in other words of Therapeutics. It is to the Materia Medica that we are to direct especial attention, although in expounding the measures by which diseases may be controlled or removed, means may be incidentally adverted to, which have an important bearing upon the success of treatment. Thus the appropriate diet, air, bathing and exercise, as well as the maintainance of heat in connexion with clothing &c. are accessories to the resources of the Materia medica; while the abstraction of blood is so decided a modifier of the effects of medicines, that the necessary expositions cannot be

omitted.

By recent writers the term Pharmacology is employed for that of Materia Medica, as it is more comprehensive. The articles of the Materia Medica, whether simple or modified, are what we call Medicines. Pharmacy is the art of preparing them for use, and by Therapeutics is meant the application, guided by principles which is made of them in the treatment of diseases. These divisions are ~~comprehend~~ comprised in Pharmacology.

Medicines are the objects of our study and investigation. Is it possible then for us to define with precision what substances belong exclusively to this class & what constitutes a medicine? Among the numerous authors whom we may consult, the same idea is met with, although a difference will be found in the language by which it is expressed, — viz. that Medicines are substances derived from the organic or inorganic kingdoms, which inherently possess the power of ~~modifying~~ affecting the solids and fluids of the body, & through them

so influencing the functional & structural vital movements, as to be serviceable in diseased conditions of the organs.

Some articles of diet are placed in the catalogue of the Materia Medica in consequence of their suitableness in certain impaired states of the digestive apparatus, & their bland, soothing or diluent properties, the feculas & gums belong to this class. The distinction to be drawn betwen food and a medicine, consists in the perfect assimilative capabilities of the former, whereby it becomes an element of the blood & in the nutritive process is made an integrant portion of the tissues, while a medicine impresses the organs, without the property of being assimilated. Still there are medicines which are exceptions to this mode of distinction, as for example the preparations of iron, which metal is necessary to the constitution of the blood. In these exceptions, alimentation or nourishment & medication are essentially different.

Again, many articles are capable of impressing

the organs inordinately, of producing such disturbance in their functions, or of destroy their structural constitution, as to lead to ~~un~~ toward if not fatal results, such substances are said to be poisonous. The line of demarcation between medicines & poisons is perhaps more difficult to be established. The Greeks confounded them, the word Pharmakon being used to ~~indicate~~ indicate either ~~toxicate~~, hence the employment of the designation Antipharmatic for Antidote. The list of the Materia Medica has from time to time contained almost every known poison. In our day many have been discarded as they are useless as medicines, but so many remain, that the distinction between the two, depends entirely upon their effects. The terms are commutable. These remedies by some authorities have been called heroic, by many they have been reprobated, but in skilful hands have afforded the most valuable aid in inveterate cases. The dose, the peculiarities of constitution, & the pathological conditions, determine whether a substance is one or the other. From

the mineral kingdom, substances of inordinate energy, fabricated by the skill of chemical science, are in daily use as curative agents, such are the salts of the metals. Cantharides are used with safety internally, but have proved energetically poisonous; and the same is the case with a large number of vegetable products.

The effects moreover, on which the distinction is based, are frequently, when poisonous, only the medicinal effects extended & rendered inordinate. This is more especially the fact with vegetable substances, but it is also true with respect to some others. Thus we have irritants as medicines & irritant poisons, sedatives and narcotics as medicines, and sedative & narcotic poisons; these terms are employed by therapeutists & writers on toxicology (the science of poisons) in the same sense, thus indicating an analogy of operation. Since organic chemistry has unveiled the principles upon which energy depends, the connection between poisons & medicines is more intelligible & better understood. These principles

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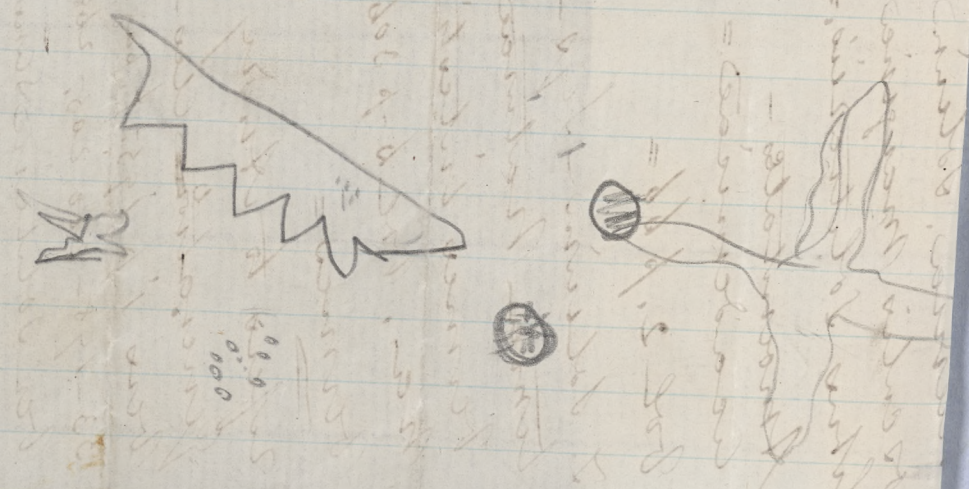
run through ~~possesses the~~ species, or among classes of substances, & upon them as constituents must we depend to explain results. It would be easy to cite examples to show that medicines and poisons cannot be separated, but this will be apparent as we proceed in our course. The practical application of my remarks is apparent, to anticipate inordinate activity when potent substances are administered. As there is some relation between food and medicines, so is there also between food and poisons. In some individuals, the introduction into the stomach of certain common articles of diet is followed by violent disturbance; and in impaired or diseased conditions of the organs, certain articles of food may become dangerous in the extreme. The baneful consequences of indiscretion in this particular are familiar to every practitioner. I have known death to follow from eating an apple in convalescence after fever. A case is on record of a gentleman of high repute of this city, having been thrown into a



condition similative of death, by eating a roll of bread, when convalescent from an acute disease in Paris, and narrowly escaping the rites of sepulchre. Food & poison then may be convertible terms, which is thus expressed by Lucretius "quod alitis esus est, aliis fiat acre venenum". What is food for one may be an acrid poison to another.

Oh Nicotia is the powerful grace that lies
In herbs, plants stones & their true qualities,
For naught so vile that on the earth doth live,
~~But to the earth some~~ ~~Also ought so good~~ special good doth give,
Nor aught so good, but strained from that fair use
Revolts from true birth stumbling on abuse.

The study of medicinal substances involves attention to a number of circumstances, which may be arranged into such as pertain to them as simple bodies, such as are important in a pharmaceutical point of view, and such as belong to them as therapeutic means. As under articles they come to us in commerce in the form of Drugs. Under this head

they must be studied with respect to their sources, their natural history relations, their modes of collection & preparation for the market and their sensible properties. As objects of pharmacy their chemical composition & relations must be thoroughly investigated; while with reference to therapeutics their modes of operating, dose & toxicological effects must be carefully inquired into.

It may be supposed that a knowledge of the sources of medicines, or in other words, the localities whence procured, is of little consequence to the practitioner. To a certain extent it is true that in such information the trader & pharmaceutist are most interested, as they deal in them as articles of merchandize, but there is another point of view in which this is to be regarded, & which ought here to be stated. Medical men are expected to be intelligent & well informed, their knowledge should be varied, or belonging ostensibly to a learned profession, they may sink in the estimation of the public, from manifest deficiency of information which may be judged to belong to that profession.

The distribution of the materials forming the Materia Medica, over the earth's surface is so extensive, that a knowledge of their exclusive existence in different portions of it, or their more general existence in several localities is a portion of the physical history of the earth. For a wise purpose the terrestrial globe has not been constructed homogeniously; it presents an infinite variety in its features, as shown in structure, mode of formation elevation, & relation to the luminous bodies which surround it. These give rise to differences in soil & climate, on which products may depend; they are amenable to certain laws, & the question of the origin of medicinal substances is not one of minute geography merely, but of something pertaining to their special derivation. Again local names are connected with varieties of drugs, & to retain these names in the mind is to retain an impression of their qualities & varieties. Turkey & Bengal opium. Alexandria & India senna illustrate my meaning.

The Natural History of the Materia Medica has now become a very important part of

the information possessed with respect to it, Natural history & Materia medica have been associated from the earliest periods. Every treatise is full of it, & from it as a part of science, important discoveries have proceeded. I would ~~especially~~ particularly recommend to you the study of Botany & the outlines of the other branches. You must ~~be done~~ pursue it however at your leisure. I might amplify on the importance of studying Botany, but this is not the time for such discussion. There are two arguments however which may now be addressed. The one is that botanic characters are in numerous instances those upon which we have to depend to identify drugs, & the other that a large portion of your text books would be plain intelligible & satisfactory.

Another subject to which attention must be directed is that of the sensible properties of medicines. If this a distinct clear practical knowledge is required, or endless difficulty, perplexities and blunders will ensue. As medicines are the instruments by which the physician accomplishes his purposes, the weapons with which he is to combat disease, familiarity with their appearance ~~& right~~ and discriminate

ting qualities should be as perfect as that of the Mechanic or artisan with his tools, or of the soldier with his arms & equipments. To understand the difference between scammony & aloes, jalap & ipecacuanha would seem to be almost intuitive, but the scope of the subject involved in the study of the sensible properties is not so restricted. Not only are we to discriminate in the case of substances whose characteristics are palpable & of easy recognition, but a critical perception of differences must be cultivated. The physician should be able to judge of qualities, for his success may depend on this contingency. Drugs exist in great varieties, the most costly are most coveted, but large quantities of inferior articles are sent into the market through the ignorance of those who collect & transmit them, or vended through the cupidity of dealers. Cinchona Bark for example instead of being an article of power in urgent cases, may be as worthless as the fuel on our hearthstones.

Another reason for the prosecution of such knowledge is the constant never ending, but ever changing practice of Adulteration. Upon the

unsuspicious, sophisticated drugs are constantly imposed. It is a crying sin, and practitioners cannot be too much upon their guard to secure themselves, & their patients from the effects of such practices. I have known entire loss of confidence in a useful medicine to result from the substitution of an inert one for it.

For ordinary purposes, a familiarity with all that pertains to sensible properties as form, colour, feel, weight odour taste &c will be the guide in the selection of articles, or the determination of their value. But differences are not always easily perceived, the wonderful cunning & devices of man aided by science, have suggested means to elude the senses, & science must be invoked to detect science. Sulphate of Quinia may adulterated with salicina, for example, a fraud which can only be unmasked by the use of sulphuric acid, where sensible properties fail as means of recognition & even chemistry is at fault, other means may be offered, as for instance the microscope in

in detecting adulteration of the feculas.

Other points of importance are the mode of growth, collection, preparation for the market, and preservation of medicinal articles. These more especially concern vegetable productions which are divided by writers into Indigenous & Exotics. Indigenous are such as are found in our own country, while exotics are those derived from abroad. Over exotics products we have no control, and with respect to those found native, very little. Our sole power consists in selecting such as conform to the standard of perfection determined by the sensible properties, which are affected by the circumstances alluded to. To appreciate their influence is of great importance, more especially as foreign plants to a large extent have become naturalized in this country. For if you will examine the list of our Pharmacopoeia it will be discovered that 5/8ths of European productions are now common to America.

That mode of growth is a powerful mod-

is demonstrated

ifier of properties, by an array of incontestable facts. It involves the influence of soil, climate tillage &c. Thus there is a considerable difference between the root of the valerian which has been reared in a moist locality & that which grows in a dry one; — the conium maculatum in warm situations is an energetic poison, hence that of Spain, Italy & Greece is most powerful, in England and this country it loses a large part of its activity, while in the cold elevated rejions of the Crimea, the peasants are said to employ it as an article of diet; — the poppy when grown in peat soil produces mouldy capsules, and the barks of low situations are destitute of activity.

The transforming power of culture is so constantly exhibited in our common vegetables, as hardly to require a notice. The metamorphised potato, egg plant, celery, tomato &c would hardly be recognised in their original wild states from which

they have been conducted. Some medicinal articles are improved, while others are deteriorated by culture. The mustard, the lavender, the fennel and others of the same families are enhanced in value, ~~while~~ and on the other hand, the cultivated digitalis, henbane, belladonna & stramonium are less efficient than if gathered from wild plants, which have sought their own localities.

With respect to the collection of medicines, it must be done when the several parts of plants yielding them are in the highest state of development, ~~most abundantly~~ — & the greatest color endowed with their peculiar virtues. To be thoroughly ripe however does not entail the greatest efficiency, as some articles may degenerate by perfect ripening; the spices for instance. This subject is connected with vegetable physiology, as upon the vegetative transformations in different portions ~~does~~ do ~~efficiency~~ their qualities depend.

Finally, ~~to consider both which belongs to~~ the preservation of crude articles ~~the~~ is highly important & interesting to the

Medical Man, as by any imperfection in the Measures taken, an active substance may be wholly inert, and disappoint his expectation. A reference to this will be made under the head of articles which are perishable.

Allusion has been made to Chemistry. Through the instrumentality of this science has the composition of Medicinal substances been unravelled, and principles detected, on which activity has been determined to depend. When procured from organic substances they are called organic or proximate principles. They are compound in their nature, & distinguished from simple elementary principles, a few of which alone compose them. They react with principles of the same origin, or with inorganic bodies, & form combinations which contribute to the resources of medicine. Morphia quinia tannic acid & others are

proximate principles of great value. It is with reference to these principles that chemistry aids us in the detection of adulterations, as it does with inorganic substances. But chemistry is a hand maid in other important particulars; the pharmaceutic art is based upon it, and every potion, pill, or powder formed in obedience to its laws & precepts. Without a knowledge of chemistry, continual perplexity & difficulty would occur from the union of incompatible articles, & its teachings are invaluable when directing the proper agents to be employed as antidotes. A still further use for chemistry is found in explaining therapeutic action.

I must now make some remarks upon the authoritative works which may be consulted in pursuing a course of studies upon Materia medica. Within a few years the press has teemed with Trea

tises on this department, and much latitude of selection is afforded. Many of them are exceedingly voluminous, so much so as, from the mass of matter presented to the student, when turning over their pages, to discourage & dishearten him. It should be recollected that the leading & important facts and principles are all that can be stamped upon the memory. To attempt the systematic mastery of all the details connected with the subject, found in extensive treatises would be a waste of time; they are invaluable as works of reference and as such may be consulted. Pereira's Elements of Materia Medica and the Dispensatories may be employed with great advantage in this way. Hand books or manuals, as they are condensed exponents of the contents of larger volumes have proved eminently useful. Royle's & Heligans Abridgments are of this character. Of the extended works alluded to, preeminently useful has been the United States Dispen

satory. At the time of its appearance in 1832, Materia Medica & Pharmacy were at a low ebb in this country. Necessary information was scattered through numerous foreign books & journals, with all the difficulties of several languages & entanglers its acquirement. As pharmacologists we were behind the times. Research, coordination of materials & clear exposition of scientific facts and doctrines achieved a victory over disorder confusion & ignorance, and our department took rank among its fellows. This book you will find invaluable, not only now as students, but in your future career as practitioners. No better has as yet been written.

The United States Dispensatory is based upon our National Pharmacopoeia. A Pharmacopoeia is a Code of rules & regulations, issued officially by some authoritative body, for the guidance of physicians and apothecaries — The Codex of France has the sanction of the government. The Pharmacopoeias

of several European continental nations are on the same footing. The British Pharmacopoeias are issued by the Colleges of Physicians, respectively of the London, Edinburgh & Dublin. Our own standard has been placed before the profession of the country, by a Convention of Physicians appointed by the Schools of Medicine, & State Medical Societies of the Union. It originated from such a body in 1820, & every ten successive years has undergone revision with the sanction of a similar Convention. The objects of the United States Pharmacopoeia are to set forth the weights & measures to be employed in dispensing or preparing medicines, — to furnish a list of all the medicines in general use, and — to present the best formulae or rules for such preparations as are kept in the shops, — and which from this circumstance are called Officinal.

Uniformity of strength was a primary —

motive with the framers of our Pharmacopoeia. By having fixed and settled formulae for all the preparations, which by careful experiment have proved to be the best, & which are to be employed whenever such preparations are made, this object is secured. One book can now be used instead of many, varying in the strength, ingredients and mode of compounding the receipts contained in them. Through this system of uniformity established, physicians in every portion of the country can have a perfect understanding of the medicines employed by others, when published or private accounts are given of diseases; and lastly when directing medicines from the shops of pharmaceutists, assurance is ~~secured~~ afforded that the precise ~~medicine~~ preparation intended will be furnished.

Another prominent idea connected with the formation of a Pharmacopoeia, is the promulgation of a proper Nomenclature. In the older works on pharmacy the names

Diago Antigatus."

of Medicines were assumed without sys-
tem; they were derived from ~~from~~ Greek, Latin or
Arabian authors, & continued without refer-
ence to the advance of science. Many of them
originated in fanciful analogies, or the
caprice of discoverers, & taken as a whole
~~constitute a chaos~~ were the representatives of learned folly, or cre-
dulous bewilderment. The progress of discov-
ery, and the precision of our knowledge
have delivered us from such barbarous
jargon as Mars solubilis, Sal de duo-
bus, Sal polychrestus, Sal chinae, Lapis
infernalis, and a host of others.
The most accurate and useful nomen-
clature is one in which the names
are brief, clear, & expressive, either indica-
tive of the exact chemical composition,
or of the natural history source from
which a medicine is derived. Our own
Pharmacopoeia in this respect may
serve as a model. The nomenclature has
been carefully elaborated, its principles
are simple & easy of comprehension, while

its language is chaste & classical. What-
ever exceptions to uniformity may be mani-
fest are owing to the impossibility of viola-
ting present established usage. I shall
be better able to impress upon you the
principles which have governed us in
these, when particular articles shall come
before us. —